PB-216 376

AIR POLLUTION PROGRAM OF THE DIVISION OF SANITARY ENGINEERING SERVICES

Arthur C. Stern

Robert A. Taft Sanitary Engineering Center
Cincinnati, Ohio

21 September 1955

DISTRIBUTED BY:

NTIS

National Technical Information Service
U. S. DEPARTMENT OF COMMERCE
5285 Port Royal Road, Springfield Va. 22151

PB 216 376

AIR POLLUTION PROGRAM OF THE DIVISION OF SANITARY ENGINEERING SERVICES

Arthur C. Stern
Chief, Community Air Pollution Program

Excerpt from Proceedings of a
SEMINAR ON AIR POLLUTION PROBLEMS
September 20-21, 1955

Public Health Service
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Robert A. Taft Sanitary Engineering Center
Cincinnati, Ohio

Reproduced by
NATIONAL TECHNICAL
INFORMATION SERVICE
U S Department of Commerce
Springfield VA 22151

Air Pollution Program of the Division of Sanitary Engineering Services

Arthur C. Stern

Since many air pollution control officials are unfamiliar with the make-up of the Department of Health, Education, and Welfare, and of the Public Health Service, advantage will be taken of this opportunity to explain their organizational structures.

The Department of Health, Education, and Welfare is, as you know, the newest of Federal departments. Its principal components are: the Social Security Administration, the Food and Drug Administration, the Office of Vocational Rehabilitation, the Office of Education, and the Public Health Service. Of these, the Public Health Service has the longest history, having been founded in 1789, and having had more than a century of affiliation with the Treasury Department prior to its transfer in 1939 to the Federal Security Agency.

To carry out its mission, the Public Health Service employs about 15,000 full time personnel, representing over 250 occupational specialties and including many health and related professions. Of these, about 2,500 are officers of the Public Health Service Commissioned Corps, and 12,500 are career Civil Service employees. The Commissioned Corps, a long established quasi-military career organization, includes many of the health professional personnel of the Service, such as physicians, dentists, sanitary engineers, nurses, and others. Commissioned officers undertake their careers in the Service early in their professional lives and, like officers in the Armed Forces, are commissioned in rank by the President, with the approval of the Senate. In addition to the active Regular and Reserve Corps components, there is an inactive Reserve Corps of about 1,400 officers who can be called to duty in case of emergency.

As presently organized, the Service consists of four major operating bureaus, all under the direction of the Surgeon General. These are:

1. Office of the Surgeon General: This consists of the Divisions of Public Health Methods, Administrative Services, Personnel, and Finance. In general, it provides the major staff services to the other three operating bureaus.

2. The National Institutes of Health: These comprise a Division of Research Grants, and the following seven National Institutes: Arthritis and Metabolic Diseases, Cancer, Dental Research, Heart, Mental Health, Microbiological, and Neurological Diseases and Blindness.

These institutes are largely grouped around a clinical center in Bethesda, Maryland, and spearhead research on the causes and cures of almost the entire gamut of diseases of man.

3. The Bureau of Medical Services: Here are grouped the basic medical services on which the Service was first founded. It administers medical care programs in a dozen Federal agencies, such as the United States Coast Guard and the Bureau of Indian Affairs. Its other operations are best described by the names of its six operating divisions, namely: Hospitals, Hospital Facilities, Foreign Quarantine, Dental Resources, Nursing Resources, and Administrative Management.

4. The Bureau of State Services: This is the bureau of greatest concern to those interested in community air pollution, because in it are grouped most of the Public Health Service's air pollution activities.

Under the direction of a Bureau Chief, who is also an Assistant Surgeon General, there are in the Bureau seven divisions, only two of which operate in fields not directly concerned with air pollution. They are the Divisions of Dental Public Health and of International Health.

Two other of the divisions have a somewhat greater interest in the problem, namely, the Division of General Health Services and the Communicable Disease Center. However, it is the remaining three divisions of the Bureau of State Services that will be actively working with States, municipalities, and industry on community air pollution problems. These are the Public Health Service Regional Organization, the Division of Special Health Services, and the Division of Sanitary Engineering Services.

Public Health Service Regional Organization

Since the Public Health Service operates mainly with and through appropriate State agencies, its regional organization provides the means for States and their municipalities to deal directly with Regional Medical Directors and Regional Sanitary Engineers. There are eight such regions in the United States, with headquarters at Atlanta, Chicago, Dallas, Denver, Kansas City, New York, San Francisco, and Washington.

No operation of the Service in a region is undertaken without the participation, cooperation, and knowledge of the Regional Office involved. This does not preclude direct contact between the central program operations in Cincinnati and Washington and our colleagues in the field, and vice versa. Rather, it facilitates these contacts by limiting them to those that are really necessary.

Division of Special Health Services

This division, in general, plans, conducts, promotes, and coordinates comprehensive nation-wide personal health and health maintenance programs for the prevention and control of chronic, heart, occupational, and venereal diseases, and tuberculosis. Its occupational disease prevention program is the present successor to the division responsible for Public Health Bulletin No. 306, entitled "Air Pollution in Donora, Pennsylvania — Epidemiology of the Unusual Smog Episode of October 1948." Its staff has, over the past several decades, developed much of the basic instrumentation and the analytical and interpretive techniques for assessing the amount and composition of air-borne dusts, gases, and fumes in factories. Many of these methods and devices have been adopted for the study of community air pollution problems.

The future role of the Division of Special Health Services in the Air Pollution Program is to take responsibility for research into the effects of air pollution upon human health. This will involve research in four broad medical areas:

1. The epidemiology of air pollution
2. The physiology and pathology of air pollution
3. The toxicology of air pollution
4. The psychology of air pollution

This research will, we hope, tell us whether we need to intensify our control efforts to avert damage to the Nation's health, or whether what we have been and are doing to control obvious pollution to allow our citizens comfortable enjoyment of their homes, work places, schools, and recreation areas has been good enough to have averted any such unfortunate result.

Division of Sanitary Engineering Services

This division plans, conducts, and coordinates national programs in the field of sanitary engineering, such as milk and food sanitation, water pollution control, radiological health, interstate carrier sanitation, etc. Not long after the dedication of the Robert A. Taft Sanitary Engineering Center in Cincinnati in April 1954, and Air Pollution Program was added to these other national programs, and responsibility was given to the Center to develop and administer the program.

This responsibility has been set forth in detail in the following Service directive, which is quoted verbatim:

> Responsibility for community air pollution operations pertaining to research, technical assistance, training, and demonstrations related to engineering is assigned to the Division of Sanitary Engineering Services. Specifically, this Division will have primary responsibility for research on the sources, extent, behavior, effects (other than health), and control of community air pollution, and for encouraging and collaborating with State, community, and other organizations in related activities. This includes (1) the physical measurement, identification, and tracing of air pollutants; (2) the design, testing, and development of methods and devices for chemical and physical measurements and for studying the complicated interchemical reactions of air pollutants; (3) the development of methods and devices for controlling or preventing the introduction of air pollutants into the atmosphere; and (4) furnishing technical guidance and consultation to States and communities in establishing and operating community air pollution control programs.

In addition to this general responsibility, the Division has a special assignment from the State Department, namely, directing and conducting, for the Technical Advisory Board on Air Pollution of the International Joint Commission, the study of air pollution along the Detroit River. That study is now in its fifth year. The Chairman of the United States Section of the Technical Advisory Board is a Public Health Service officer associated with the Air Pollution Program of the Robert A. Taft Sanitary Engineering Center.

Sanitary Engineering Center

The Sanitary Engineering Center is organized to conduct research and provide technical assistance in the fields of water supply and water pollution, milk and food, radiological health, and air pollution. (Figure 1) Its community air pollution program (Figure 2) is divided into the following operating units:

1. Chemical Research and Development
2. Engineering Research and Development
3. Instrument and Methods Development
4. Meteorology
5. State and Community Services

TENTATIVE ORGANIZATION CHART
ROBERT A TAFT SANITARY ENGINEERING CENTER

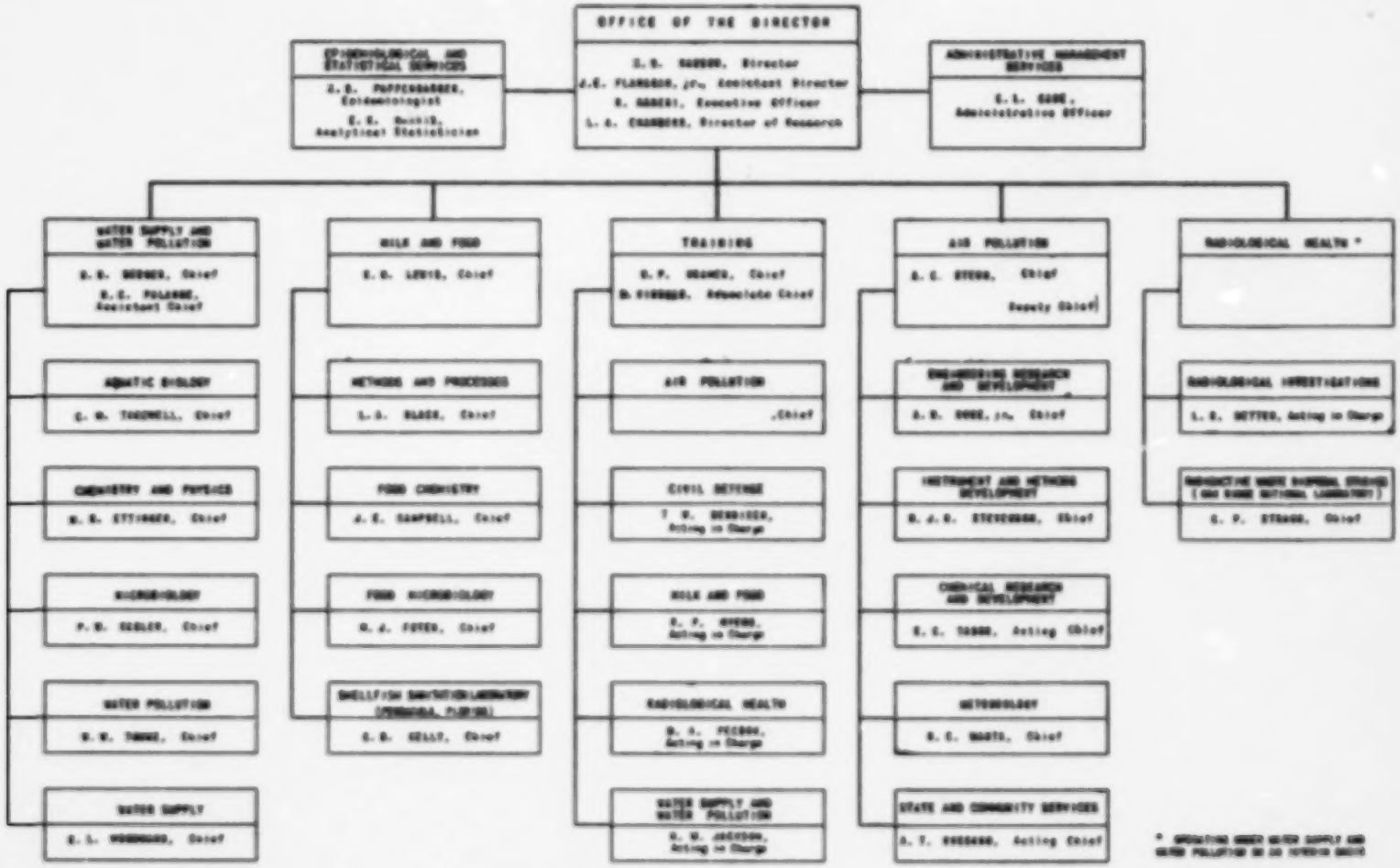

Figure 1

TENTATIVE FUNCTIONAL CHART

ROBERT A. TAFT SANITARY ENGINEERING CENTER

AIR POLLUTION

OFFICE OF THE DIRECTOR

Plans, directs, and evaluates the work of the Center in conducting research, furnishing technical services, and providing advanced training in the programs of the Division of Sanitary Engineering Services in air pollution, solid and liquid wastes, water supply and water pollution control, and other emerging programs in the sanitary engineering field; develops jointly with Divisional program heads the program of the Center and the policies and operational procedures for carrying out the activities of the Center; broadly directs program relationships between the Center and other parts of the Service, other agencies, and outside organizations; directs public relations, technical exchange, library, and security activities, and education facilities.

CHIEF, AIR POLLUTION

Develops and administers a technical research program relating to the physical, chemical, engineering, and meteorological aspects of air pollution; develops plans and programs for joint investigations with public and private agencies and organizations undertaken for eliminating or reducing air pollution; provides principal technical representation for the Public Health Service with other agencies on air interagency work; provides technical services to state and local communities in formulating and evaluating their air pollution abatement programs; develops, evaluates, and recommends approval of plans for contract research, training and demonstration projects; maintains liaison with the Division of Research Grants in reviewing proposals for grants-in-aid; prepares and publishes results of research and surveys relating to air pollution, and participates in training courses.

OFFICE OF THE CHIEF

Provides administrative services for the Air Pollution Program with responsibility for budget, building, fiscal, safety, and personnel management, property, supply, filming and transportation; responsible for the preparation of work plan/budget and other periodical authority reports, case letters and statistical summaries as are required from the program and for in-service training, employee and contract training/educational services; provides program statistical services in relationship with the statistical staff of the Center; allocates space and equipment facilities; coordinates liaison between the program and the Office of the Director.

Develops and administers all duties undertaken in support of the United States Section of the Technical Advisory Board on Air Pollution of the international Joint Commission; prepares reports, publications and documents required by the United States Section of the Technical Advisory Board on Air Pollution; recommends and implements all contract activity undertaken by the United States Section; arranges for meetings of the Technical Advisory Board on Air Pollution held in the United States; represents the Technical Advisory Board on Air Pollution in the relation with state, municipal and private agencies.

INSTRUMENT AND METHODS DEVELOPMENT

Develops and administers a research program for the development and improvement of methods and the development of instruments for the determination of the nature and quantity of contaminants in the atmosphere; applies chemical and physical principles to the design, construction and testing of new methods and equipment and to the adaptation of existing methods and equipment; for measurement of air pollution; establishes and maintains pool of equipment for immediate availability for air sampling and analysis in case of an air pollution emergency in any part of the United States; develops and makes available means for a continuous representative air sampling for use in connection in anticipation of an air pollution emergency; promotes research in the instrument and methods development field; plans and supervises such contract activity as develops; performs the physical and performs such analytical research by the program; renders technical assistance to the training Section of the Center; for work in this field; maintains liaison with technical associations, organizations and committees and with the Bureau of Standards, Atomic Energy Commission, National Research Council and Department of Defense.

CHEMICAL RESEARCH AND DEVELOPMENT

Develops and administers a research program relative to the chemical constituents of the atmosphere and to the reactions between them; provides all chemical analytical services for the Air Pollution program; endeavors to extend the capability of the program for rapid analysis of pollutant samples to as large a number of elements and compounds as chemically by the development, combination and adaptation of analytical procedures and techniques acts as a reference laboratory in the field analysis of atmospheric particulate; develops and standardizes sampling equipment and methods for the National Air Sampling Network; provides analytical services to state and municipal agencies for a limited number of samples for analysis beyond their capabilities; develops and conducts project measures for the correlation, analysis, study and existing characteristics of the atmosphere; promotes research in the air pollution analytical field and supervises such contract activity as develops; renders technical assistance to the training Section of the Center for work in the air pollution analytical field; maintains liaison with technical organizations, associations and committees and with state, municipal, institutional and industrial laboratories relative to the analytical phases of air pollution.

METEOROLOGY

Develops and administers a research program for the investigation of the relationships of meteorological and micro-meteorological factors influencing air pollution; develops methods for predicting air pollution occurrences and intensity based on meteorological factors and performs field tests to evaluate such factors; analyzes data from the National Air Sampling Network, state surveys, and meteorological studies for associate meteorological correlation; develops program obtained and actively in the field of measurement and instrumentation for solar and terrestrial radiation, aerodynamics, eddy flow and eddy diffusion processes through the atmosphere; renders technical assistance to the training Section of the Center for work in the meteorological field; develops program research in weather modification as a method of air pollution control; promotes research in the air pollution phase of meteorology and supervises such contract activity as develops; maintains liaison with technical associations, organizations and committees and with the United States Weather Bureau, the Civil Aeronautics Authority, the National Advisory Committee on Aeronautics, the Advisory Committee on Weather Control and the United States Air Force.

STATE AND COMMUNITY SERVICES

Develops and administers all activities of the Program conducted for or with state or local agencies including grant studies and technical assistance on organization, administration, legislation and training; arranges for all local air sampling in connection with the National Air Sampling Network; responsible for all relationships with Public Health Service Regional Offices; prepares and edits all publications developed by the Program as a whole; maintains continuous records of the nature, nature and location of air pollution problems within the United States; evaluates actively and local and state legislation; develops a manual text of air ordinances; studies the cost and economic losses due to air pollution; and of the relationships between regional and city planning and zoning; develops up-to-date plans and arrangements for meeting an air pollution emergency in any part of the United States; renders technical assistance to the training Center for work in the regionalized, organization and administrative phases of air pollution; maintains liaison with industrial and technical associations, organizations and committees, with state and local air pollution control agencies and with the Department of Agriculture.

EXPLORATORY RESEARCH AND DEVELOPMENT

Develops and administers an engineering research program in the field of air pollution for the determination of the nature and quantity of effluents discharged to the atmosphere and for the development of means for the reduction of the quantity or change in the nature or quantity of such effluents; promotes research in the Air Pollution engineering field and supervises such contract activity as develops; designs, maintains and operates a pilot plant for the study and testing of air pollution control equipment and processes and incineration equipment and combustion processes; performs field tests for study and evaluation of air pollution control and combustion equipment; performs industrial process evaluations to determine the nature and quantity of contaminant discharge to the atmosphere; renders technical assistance to the training Section of the Center for work in the Air Pollution engineering field; maintains liaison with industrial and technical associations, organizations and committees and with the Bureau of States relation to the engineering division of Air Pollution.

Fig. 2

Chemical Research and Development

The principal research activity of this group is the National Air Sampling Network, now in its second year. This involves the collection of air samples from all parts of the United States on a routine basis and their shipment to the Center at Cincinnati for chemical analysis. This effort is, for the first time, giving a unified picture of the general pollution levels of the nation, and will prove a potent tool when correlated with the epidemiology of air pollution under study by the medical section of our program.

Engineering Research and Development

The Engineering Research group of the Air Pollution Program of the Public Health Service has as its general area of activity the determination of the nature and quantity of effluents discharged to the atmosphere, and the development of means for the reduction of the quantity or change in the nature and quantity of such effluents. In connection with this responsibility, it is developing a pilot plant and testing facility at the Center. Specific projects being undertaken this year are: An experimental study of the factors affecting the design and performance of fabric filters of the type known in industry as bag houses, dust arresters, or cloth dust collectors; an experimental study of some incinerator design factors; field studies of effluents from the cotton ginning industry and their control; and an evaluation of the various forms of micro-Ringelmann charts for measuring smoke density. In addition, this group has assigned one man full time to work with the State of California and the Los Angeles County Air Pollution Control District to assist them in their study of petroleum refinery effluents.

Instrument and Methods Development

No fields of air pollution research need more new approaches than the development of automatic instrumentation for 24-hour-a-day monitoring and surveillance of the atmosphere and the study of the exact nature of the atmospheric contaminant. One of the most exciting areas of investigation is the influence of exotic pollution on smog formation over urban areas. We feel now that we must look beyond the pollution produced by the afflicted city to the contaminant coming in with the supposedly "clean air" from the countryside, the sea, or the lakes. There are many indications that the interaction between local and foreign contaminants may, for many communities, spell smog. All these areas are now under study by this group.

Meteorology

The Weather Bureau team at the Sanitary Engineering Center has for its current projects studies in each of the following project areas: Definition and prediction of smog episodes; relationships between meteorological variables and air pollution levels; trajectories and air mass modifications; feasibility study of modeling atmospheric transport and diffusion; and development of a mobile meteorological unit and of a fixed station for the Center. In addition, by tying in the meteorological group with the several field studies underway, a new approach to air pollution sampling is being developed in which predictive meteorological data in large measure determines the kind of air sampling to be undertaken.

State and Community Services

Technical assistance to States and local communities is the primary function of our State and Community Services unit.

(Figure 3)

U. S. PUBLIC HEALTH SERVICE

Community Air Pollution Program
Budget for Fiscal Year 1956

(July 1, 1955 — June 30, 1956)

Research Grants		$500,000
Research Contracts		
Medical — $200,000		
Non-Medical — 50,000		
Total —		250,000
Research in other Federal Agencies		
Weather Bureau — $200,000		
Bureau of Mines — 100,000		
Bureau of Standards - 100,000		
Total —		400,000
Training		40,000
Direct Operations		
Medical — $160,000		
Non-Medical — 330,000		
Total —		490,000
Grand Total		$1,780,000

There has been some public misunderstanding as to the availability of funds as the result of the passage of Public Law 159, 84th Congress. Although this law authorized the appropriation of not more than five million dollars a year for five years, the actual appropriation for this fiscal year — the first one under the law — is one and three quarter million dollars. (Figure 3) The law includes no authorization for formula grant-in-aid appropriations for air pollution purposes. However, it does authorize grants for research, training, and demonstration projects.

What we can do this year is to work out specific projects where there can be Federal -State-Local cooperation. We have negotiated with several States and communities for such projects. We have reached agreements with the State of California and Los Angeles County to provide three people to work in the State, two of whom will work with the County. The State is matching that personnel, man to man, and in the two Los Angeles County projects, the understanding is that the County will assign about six men each to the projects to which the Federal and State people are assigned. Thus, the total Public Health Service participation in these California projects is of the order of 20 percent. A similar project has been negotiated with the State of Kentucky, Jefferson County, and the City of Louisville. In this project, the participation of the Federal establishment is approximately 50 percent of the total project; the State, county, and city providing the remaining 50 percent. The participation of the Public Health Service itself is again about 20 percent of the total project, which has a dollar value of around $140,000. Similar discussions are underway in one or two other areas of the United States; all directed to this same type of project arrangement, whereby the principal backing of the project is local with the Public Health Service participation of the order of 20 percent, although the total Federal participation (i.e. including Weather Bureau, Bureau of Mines and Bureau of Standards contribution) may range anywhere from 30-50 percent.

We have just about reached the end of our fiscal ability to take on more long-term cooperative projects this year. However, States and communities should feel free to call on the facilities of the Center for short-term technical assistance, either in the field or in the laboratory. No formal negotiation is needed to obtain such help. The preferred channel for requesting short-term technical assistance is for the local government air pollution control agency to request the specific aid sought through the State air pollution control agency (which means the State Health Department, unless some other single State agency is charged with air pollution abatement responsibility). The State agency should in turn forward local requests, or transmit its own requests for technical assistance, to the Public Health Service Regional Office, who, in its turn, will transmit them to the Community Air Pollution Program at the Sanitary Engineering Center. This procedure will amplify the aid available to States by adding Regional Office resources to those of the Center, and will further amplify aid to local communities by adding the resources of the State air pollution control agency.

The other functions of our State and Community Services unit include the preparation and distribution of directories, news-letters, informational studies, manuals, and bulletins in areas helpful to local and State administrative agencies, and to the public.

Research Grants and Research Contracts

In setting up its air pollution research program, the Public Health Service has taken the view that the principal research resources of the Nation lies in its universities, research institutes, and in the research establishments of American industry. In order to make maximum utilization of this tremendous research potential, two mechanisms are being employed: research grants and research contracts. Although both these mechanisms are aimed at tapping the same group of non-Federal researchers and research facilities, they do so by different means.

The research grant seeks to elicit the research ideas of these researchers and to provide funds to let them undertake studies and experimental work based upon their own ideas. Since such ideas arise from all parts of the country and from persons of diverse professional skills and backgrounds, this approach has the major virtue of freeing the investigative process from the strait jacket of the limited concept of any single individual or small guiding group.

However, the very spontaneity and diversity of such ideas would tend to give a shotgun pattern to the resultant research. Certain areas of interest to individual researchers will by this mechanism be intensively investigated at the same time that other areas go untouched. To fill in the gaps, it is necessary to have a means by which some coordinating agency, in this case the Public Health Service, can contract with this same group of researchers for projects conceived by the Service as necessary for an integrated approach to the air pollution problem. This is the research contract.

Application for Research Grant

Since many of you may be potential applicants for research grants and potential recipients of research contracts, a more detailed exposition of these is in order. Specifically, there is available a lump sum earmarked for air pollution research grants. In the present fiscal year, it is a half million dollars. Those who wish some of this money for support of their own research effort must make application on forms available for this purpose from any regional office of the Service, from the Sanitary Engineering Center in Cincinnati, from the Service headquarters in Washington, or from the Division of Research Grants, National Institutes of Health, Bethesda, Maryland. As would be expected, the applicant must describe the proposed research, its objectives, the means to be employed in trying to reach the objective, the equipment and facilities available to the researcher, the new equipment or facilities that would have to be acquired with research grant funds, the personnel proposed, their qualifications, and last, but most important of all, the qualifications of the applicant or principal researcher, who must be one and the same person.

Use of Research Grant Funds

Research grant funds may be used to pay the salary of the principal investigator and the salaries of those who work on the project under his supervision, provided all or part of the salaries of professional personnel be paid from research grant funds only to the extent that they have previously been paid from other than regular institution funds. Since there is a limit of 15 percent overhead, it is appropriate in a research grant application, that the institution sponsoring the research underwrite some of the cost of the study, at least to the extent of the remainder of the overhead costs. Actually the applicant institution may choose to carry a larger share of the project costs, or may solicit for funds from sources other than the Public Health Service research grants program for sharing the costs of the project. Although the grant is made to one or several designated principal researchers, they must be sponsored by an institution which on the application must indicate its willingness to accept responsibility for the study and for the administration of the grant funds. Should the principal researcher change institutions, the research grant does not automatically move with him, nor can the sponsoring institution automatically apply research grant funds to support someone other than the designated principal researcher. Such changes can be made only after specific Public Health Service approval.

Approval of Research Grants

Upon receipt by the Public Health Service, a research grant application is referred to a study section made up of eminent engineers, scientists, and physicians, most of whom are non-Federal employees, who recommend approval, disapproval, or deferment of the application on its merits, or ask to have it resubmitted after revision or amendment, and who finally give approved applications a priority rating. The applications from all study sections, after review by the National Advisory Health Council, and approval by the Surgeon General, are then supported to the extent of the availability of funds. For instance, if there are a million dollars worth of accepted applications and only a half million dollars of available funds, the half million dollars worth having the highest priority will receive support. The remaining projects that do not receive funds, may subsequently receive support if and when additional money becomes available in the same or a subsequent fiscal year, provided new applications of higher priority sufficient to use up available funds are not approved in the interim.

Research Contracts

Since the form of research contracts (as distinguished from research grants) is, at the time of writing, still under study, no such contracts have as yet been let. There is, however, an appropriation this year for a quarter of a million dollars for such contracts, and they will be negotiated during the next several months. Since both reasonable overhead and profit can be allowed in such contracts,

they can be let to both profit-making research organizations and self-sustaining non-profit research institutes. It is anticipated that the size of individual contracts will be in the same range as has been indicated for research grants. There is nothing in the enabling legislation to prevent a municipality or a State from acting as sponsor for a research grant or of accepting a research contract. This fiscal year, 80 percent of the contract appropriation will be used for studies sponsored by the Division of Special Health Services; 20 percent for those negotiated by the Division of Sanitary Engineering Services.

Other Federal Research

In addition to fostering research in non-Federal establishments, the various agencies themselves are undertaking a substantial air pollution research effort, a large part of which is being conducted by Federal agencies other than the Public Health Service, using funds appropriated by Congress to the Service. Specifically, $400,000 worth of research is being provided this year by the Weather Bureau and the Bureau of Standards of the Department of Commerce, and by the Bureau of Mines of the Department of Interior, using Public Health Service funds made available to these agencies through the Division of Sanitary Engineering Services.

The Weather Bureau has accepted the largest of these interagency commitments, and has among other things, established a field station at the Sanitary Engineering Center in Cincinnati. Weather Bureau and Public Health Service personnel are now working there side by side in a research effort to explore more fully the relationships between meteorology and air pollution, and will soon be working side by side in field studies in several parts of the United States.

The Bureau of Mines has accepted research studies on the composition of automobile exhaust, the design of incinerators, and the removal of SO_2 from stack gases; it will make available for these studies some of the best research facilities and personnel in these fields in the Nation.

The Bureau of Standards' special area of interest is the development of methods and instruments for analyses of gases and vapors in the atmosphere. This is being done both at the Bureau's central research establishment in Washington and in the field. The areas chosen for field studies include Los Angeles, Louisville, and other cities having atmospheric contaminants of an extremely complex nature.

Conclusion

It is hoped that this discussion will have given you a clearer picture of the Division of Sanitary Engineering Services' Community Air Pollution Program for the current fiscal year. We would appreciate your comments and advice on how to improve it over the next several years.